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Why Evidence Matters: Examining the Knowledge and Perception of Pre-Service Teachers

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WHY EVIDENCE MATTERS: EXAMINING THE KNOWLEDGE AND PERCEPTION OF PRE-SERVICE TEACHERS

by

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ABSTRACT

Evidence-based educational policymaking has become a global phenomenon (Wiseman, 2010). According to the Institute of Education Sciences, evidence-based education is "an integration of the professional wisdom and the best available empirical evidence on making decision about how to deliver instructions" (IES, US Department of Education, 2012). This suggests that best practice requires teachers to ensure that instructional strategies and programs implemented in their classroom have been studied in scientific experiments to determine their effectiveness. The general public, as well as practicing teachers, holds an assumption that educators have knowledge as to what is evidence-based education. However, this is not always the case. The objective of this these include: to document how pre-service teachers access research findings and what types of findings they use in their practice, to identify the purposes of its utilization, to identify the factors that influence research utilization, and to ensure the accessibility of the findings of this study. The population for this study will be pre-service teachers at a large public higher education institution and one state college. In order to meet these objectives I conducted a survey, a pre-service teacher focus group, and an interview with faculty. Research findings will impact pre-service teacher preparation programs and increase our understanding of the link between the researchers and educators.

ACKNOWLEGDEMENTS

I would like to express sincere gratitude to everyone who supported me throughout this journey as an honors student, and in writing my thesis. I am extremely grateful for the guidance and constructive criticism that I received from friends and faculty, which motivated me to strive even harder to ensure that this research will positively impact the learning of pre-service teachers in the classroom.

I express warm appreciation to Dr. Valerie Anne Storey for taking me under her wing. Thank you for your continued support, for believing in me, and providing me with opportunities to step out of my comfort zone, and for making me realize that I can conquer any challenge.

I would like to thank my committee for taking the time to be a part of this research. Thank you for your expertise and your insights.

DEDICATION

To my mother, Alexia, whom I treasure, thank you for love, support, and encouragement. Giving me life, and nurturing me into the women I am now.

My big brother, Craig, I want to thank you for always having my best interest at heart, and protecting me.

Aunty Ava, I appreciate you allowing me to make your house my home.

Thank you, Theresa, for being the best "big sister," and being my mentor and a role model. Because of you I am a *butterfly.*

For my sister Naomi, I hope I inspire you to take challenges and to be confident because you can truly accomplish anything you set your mind to.

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CHAPTER ONE: INTRODUCTION

In 2010, the Committee on Teacher Education (CTE) sponsored by the National Academy of Education (NAE) was formed to refine and articulate the pedagogical knowledge base for teaching and to make recommendations for the development of curriculum in teacher education (Darling-Hammond, Bransford, LePage, Hammerness, & Duffy, 2005). The committee recognized that all educators have the same goal of having a positive influence on their students and providing them with all the tools necessary to become successful both within the boundaries of the classroom and beyond. Nevertheless, there is no research that directly assesses what teachers learn in their pedagogical preparation and then evaluates the relationship of that knowledge to student learning and teachers' behavior (Wilson, Floden, and Ferrini-Mundy, 2001, p. 12). This gap in the literature is exacerbated by the fact that evidence-based education was not advocated by the CTE as grounding pre-service teachers' core curriculum. While the CTE report expressed a strong belief in the integrity and significance of educational research, it included the recommendation that action research should be part of a core curriculum. Yet, it failed to reference the importance of pre-service teachers developing information literacy skills or an awareness of the need to access, use, and apply evidence-based practices in the classroom**.**

For the most part, evidence-based practices in school focus on two major areas: (1) instructional strategies, the approach a teacher may take to achieve learning objectives, which specify what the teacher would like the students to achieve; and (2) classroom management strategies, a term that implies the prevention of disruptive behavior, usually used by teachers to

describe the process of ensuring that classroom lessons run smoothly despite disruptive behavior by students.

According to Wiseman (2010), evidence-based education policymaking has become a global phenomenon. It has been over a decade since the U.S. Department of Education (2002) recognized the need for educators to not only be cognizant of evidence-based practices but also to apply them in their classrooms. The Institute of Education Sciences stated that evidence-based education is the combining of professional experience and the best available empirical evidence on making decisions about how to deliver instructions (Student Achievement and School Accountability Conference, 2012). In other words, evidence-based education instruction is the "excellence" that all teachers should strive for. It requires teachers to ensure that their instructional strategies and programs implemented in their classroom have been studied in scientific experiments to determine their effectiveness. Regardless of the varying terminology used to describe evidence-based practice in education (e.g. research-based teaching, evidence informed teaching), the engagement with research as part of reflective practice in schools has been advocated for many years (Williams & Coles, 2007). Yet, there is still a long way to go before all teachers regularly consult research to validate their classroom practices.

So how does a classroom teacher know if a practice is evidence-based? Academic researchers from universities, government departments, external evaluating teams, and private foundations all produce and publish research-based evidence and data. Do teachers not know the importance of consulting such research? Do they not know how to access such research? Or, having accessed the research, do they have difficulty comprehending both the methodology and the results?

One method teachers should be familiar with is meta-analysis, which reviews all the research on a topic, analyzes the individual results, and then summarizes the overall findings. The sum of these research studies in a meta-analysis are compared and contrasted to produce results that would inform teachers of the different programs they could implement. These results present reliable information, helpful strategies, and the statistics about their successes or failures.

One recently published example of a meta-analysis analyzed the evidence of the Good Behavior Game (GBG) program, which focuses on classroom management. A total of twenty-two (22) studies fit the criteria to be included in the meta-analysis. The review aimed to describe and quantify the effect of the GBG on various challenging behaviors in school and classroom settings. The results suggested that the GBG had moderate to large effects on a range of challenging behaviors across all 22 studies and these effects were immediate (Flowers, Mckenna, Bunuam, Muething & Ramon, 2014). The result of this study shows that the program is both efficient and effective in achieving the program's goals. Such a meta-analysis can identify previously unknown patterns among studies and results, sources of disagreement among those results, and other interesting relationships. This meta-analysis can assist educators when they are reviewing the effectiveness of a specific strategy for implementation in their classrooms to improve student achievement. The study also identifies for an educator a program that is effective based on empirical research rather than biased marketing or teacher lore. Yet with the many studies conducted, and a plethora of databases and online journals available, relevant studies seem to be going unnoticed by many teachers.

Many factors exist as to why evidence-based education practices seem to be minimal. Hemsley-Brown and Sharp's (2003) cross-national review of research in multiple English-

speaking countries over the period 1988–2001 discovered that teachers' use of research, including a lack of access to academic journals, the daunting amount of research jargon, and overly theoretical orientations, as well as general distrust of the findings are indeed barriers.

In 2007, Williams and Coles found that despite the increase in online access to evidence-based education research, accessibility and time committed to understand basic skills to apply information into practice continue to be an issue. A second highlighted issue was the need for teachers to be information literate (Williams and Coles, 2007). Information literacy is the capability of an individual to locate and critically evaluate information and to make effective use of the information in decision-making, knowledge creation, and problem solving. Another highlighted issue is that educational researchers may not be adequately prepared to disseminate research to educators in useful ways (Schoenfeld, 2009); for example, in different media such as YouTube or iTunes University.

CHAPTER TWO: PURPOSE AND SIGNIFICANCE

Undergraduate research describes student engagement from induction to graduation, individually and in groups, in research and inquiry into disciplinary, professional and community based problems, and issues including involvement in knowledge exchange (Child P., Healey, M., Lynch, K., McEwen, L., Mason O'Connor, K., Roberts, C. & Short, C. 2007). Many studies have been completed acknowledging the gaps among the researcher, teacher, and the usefulness of educational research. The purpose of this study is to address this gap identified in the literature by determining how relevant evidence-based education is to pre-service teachers, to increase the knowledge of evidence-based education to pre-service teachers, and to make recommendations to faculty working with pre-service teachers to enhance instructional delivery in the K-12 classroom.

What does this mean for the pre-service teacher? If evidence-based practice usage among educators is currently limited as research suggests, then it is a moral imperative that current educational researchers discover the existing knowledge, perceptions, and possible barriers to its usage. What is hindering teachers from using evidence-based practice to support the quality of their instruction? Pre-service teachers need to learn to use evidence-based practice, but so do teachers already in the system.

The contribution of this study will impact pre-service teacher preparation programs, and increase pre-service teachers' understanding of the importance of ensuring that their instructional delivery is grounded by evidence-based research. Long-term, this study could improve evidence-based practice used among teachers who have been in the classroom for many years.

CHAPTER THREE: HYPOTHESIS

Though there appears to be a trend toward using evidence-based education to improve policies and practices, which is federally mandated, there is little empirical evidence from the field to support this notion. This empirical research study hypothesizes that pre-service teachers (1) make little use of evidence-based education practices, or; (2) have little requisite knowledge of how to identify, analyze, implement, and evaluate research findings to support their instruction during their teacher preparation program, and (3) have limited exposure to the tools required to access evidence-based practices during their teacher preparation program.

This hypothesis was formed based on the outcomes of prior studies, which conclude that the utilization of research varies depending on individual attitude, awareness, and expertise (Dagenais, et al., 2012).

Operational Definitions

Some operational definitions and terms that the reader should be aware of are:

Evidence-based practices, which is the use of scholastic strategies and programs that have been studied in scientific experiments.

Empirical research, which is a way to gain knowledge through observation and experimentation rather than theory and belief.

Pre-service teacher, which is a student enrolled in a higher education institution in the process of completing all requirements to obtain their professional teaching credentials.

CHAPTER FOUR: LITERATURE REVIEW

Evidence-based practices have been used extensively in many fields. Domains such as agriculture, medicine, engineering, architecture, and physical sciences rely heavily on evidence-based practices. For example, according to Lewis and Orland (2004), in the medical field, applying knowledge gained from large clinical trials to patient care promotes consistency of treatment and optimal outcomes. Evidence-based medical practices also helps establish national standards of patient care. The implementation of evidence-based medical (EBM) practices that relies on the rules of evidence and research requires a commitment from medical schools, professional associations, physicians, pharmacist, local health, and medical licensing departments. In the last decade, there has been continued emphasis on ensuring that medicine is an evidence-based profession. However, this is not the case in the field of education, which historically has been grounded by ideology and professional consensus. Anecdotes and fads have traditionally dominated the policymaking arena. There has been little evidence of the application of scientific methods and use of objective information in policymaking despite the fact that policymakers want to change education to become an evidence-based field (U.S. Department of Education's Strategic Plan for 2002–7, 50).

This section will explore the proposed conceptual framework for this empirical research study. Literature searches were conducted focusing on three conceptual pillars that influence teachers' usage of evidence-based practices in the classroom. First, the concept of teacher efficacy is examined; second, the structures of teacher preparation programs are identified; and third, the influence of information literacy in enabling the teacher to comprehend accessed research is examined.

Teacher Efficacy

Albert Bandura, a leader in the development of self-efficacy theories, noted that experience or what he called performance accomplishments is a critical factor in the establishment of self-efficacy (Bandura 1977). He also discussed four sources of efficacy expectations: (1) performance accomplishments, (2) vicarious experience, (3) verbal persuasion, and (4) physiological states. Performance accomplishment is based on personal mastery experiences. Strong efficacy expectation is built through repeated success. It is worth noting that occasional failures do not have a heavy negative impact on efficacy (Bandura, 1977). For example, when a new teacher experiences some failures, he or she will overcome them by strong self-motivation, along with being open minded to tackle difficult tasks.

Vicarious experience can be defined when a teacher might observe another teacher's practice, and will feel comfortable and confident that he or she can be more successful than their peers in their abilities. According to Bandura (1977), watching others perform activities without experiencing adverse consequences can inspire individuals to believe if others can, they can too. They also should witness improvements in their own efforts.

Physiological states pertain to how we judge our own self-efficacy during different situation that heighten our stress or anxiety levels. Emotional arousal can also affect self-efficacy (Bandura, 1977). Verbal persuasions are attempts to influence behavior. It is a concept we all become victim of or a culprit. Verbal persuasion is readily and widely used. When given information of what to expect in the future it can deter any emotions of doubt and fear. As new teachers enter the workforce, verbal persuasion in the terms of positive suggestion lead teachers to believe they can cope successfully with what has defeated them in the past. If the message

given so happens to not aligned with ones' expectation it potentially can weaken one's efficacy (Bandura, 1997).

According to Hoy (2000), efficacy is the teachers' confidence in their abilities to promote students' learning. The two types of theories that construct efficacy are *personal* and *general* teaching efficacy. Personal teaching efficacy is a teacher's sole confidence in his or her teaching abilities, while general teaching efficacy is the power that teaching has influencing difficult students or situations. There is some evidence that teacher preparation course work, field experience, and practices have differential impacts on personal and general teaching efficacy among pre-service teachers. General teaching efficacy appears to increase during college coursework, then decline during student teaching (Hoy & Woolfolk, 1990; Spector, 1990), suggesting that the optimism of pre-service teachers may be somewhat tarnished when confronted with the realities and complexities of actually teaching. Internships and field experience provide opportunities to gather information about one's personal capabilities for teaching. However, when it is experienced as a sudden and total immersion approach to teaching, it is likely detrimental to building a sense of teaching competence. Pre-service teachers often underestimate the complexity of teacher's responsibilities and their ability to manage many agendas simultaneously (Hoy, 2000, p.5-6). "Knowing the variables that affect the development of positive efficacy beliefs of pre-service teachers and how they change over time, may be useful in planning for coursework and practicum experiences that enhance teaching efficacy throughout the teacher preparatory years" (Cantrell, Young, & Moore, 2003 p. 177). The question to be asked is how to increase pre-service teachers' efficacy in the use of research methods and evidence-based education.

Teacher Preparation Programs

Research indicates that a knowledgeable teacher is better equipped to facilitate student learning than teachers who have not been academically prepared (Olson, 2000). The landscape of teacher preparation must address the enormous pressures that face today's teachers. Currently in the United States, teachers are under intense scrutiny while addressing the changing needs of students who are both increasingly diverse and polarized with respect to their socioeconomic status (Borman, Mueninghoff, Cotner, & Frederick, 2009). Most teacher preparation programs consist of the following:

- Subject matter knowledge: knowledge is general; broad-based versus in-depth.
- Pedagogy and methodology taught in a structured, integrated manner and time frame
- Experiential learning
- Structured activities such as observation and guided tutoring
- A Capstone course, largely independent student teaching in preparation to enter the profession (Borman et al, 2009).

As higher education institutions become more accountable to the taxpayer, the performance of teacher graduates in the classroom will become an accountability tool. It is in the interest of all teacher preparation programs to ensure that pre-service teachers have the strategies for confirming that their classroom instructions and management reflect excellent practices and that they are information literate and can access, critically analyze, and implement evidence-based practices.

Green and Kvidahl (1990) conducted a study looking at the use of empirical research by teachers. Four hundred and forty-one teachers in the United States expressed positive opinions

about the usefulness of research, reporting that on average they consulted research literature once per year. This was an alarming finding and even more concerning is that a later study conducted by Berube (2006) discovered that 60 % to 90 % of teachers reported research use as low as "never" to "sometimes." This finding did not align with the goals of the U.S. Department of Education's Strategic Plan (2002-2007). In fact, in 2002, the Institute of Education Science (IES), U.S. Department of Education, established What Works Clearinghouse (WWC) as a resource for informed education decision-making. To reach this goal, WWC identifies studies that provide credible and reliable evidence of the effectiveness of a given practice, program, or policy (referred to as "interventions"), and disseminates summary information and reports on the WWC website. With over 700 publications available and more than 10,000 reviewed studies in the online searchable database, the WWC aims to inform educators as they work toward improving education for students. However, teacher knowledge and use of this resource has been disappointing.

Perhaps teachers reporting their low report use of research is not surprising, considering that teachers are not rewarded time or granted funds (Green et al., 1990). As a result, it does not appear to be a high priority in teacher preparation core curriculum content.

In an attempt to discover the big picture of why teachers were not turning to empirical study research outcomes, Cousin and Walker (2000) conducted a study in which they found an association among expertise with research and individual's qualities and dispositions of self-efficacy. Lysenko (2007) further supported the outcomes by concluding that teachers' experience with research education increases the chances of their engagement with research. A later study by Dagenais et al., (2008) found roughly one third of teachers reported, on average,

that they used local or general research-based information once or twice a year. Another third proclaimed they had not used research in their practice in the same time frame.

In order to engage in research, a pre-service teacher needs to be exposed to and have the opportunity to practice inquiry skills. According to Healey (2005), inquiry-based learning benefits student learning through direct involvement in research. Healey highlighted the fact that pre-service teachers can learn about research methods in many ways. Knowing these research methods can include undertaking their own independent research, assisting other faculty with their research, or working with a teacher, school, or school district to conduct action research on a problem of practice from the field. Also, departments and colleges can construct a connection between research and teaching by creating curriculum designed to fulfill three dimensions within the research nexus. Healey presented a visual diagram (see Figure 1) to explain the relationship between the following three dimensions and four research methods. The three dimensions according to Healey (2005) are as follows:

- Emphasis is on research content or research processes and problems
- The students are treated as the audience or participants.
- The teaching is teacher-focused or student-focused.

The four research methods according to Healey (2005) are:

- Research-tutored
- Research-based
- Research-led
- Research-oriented

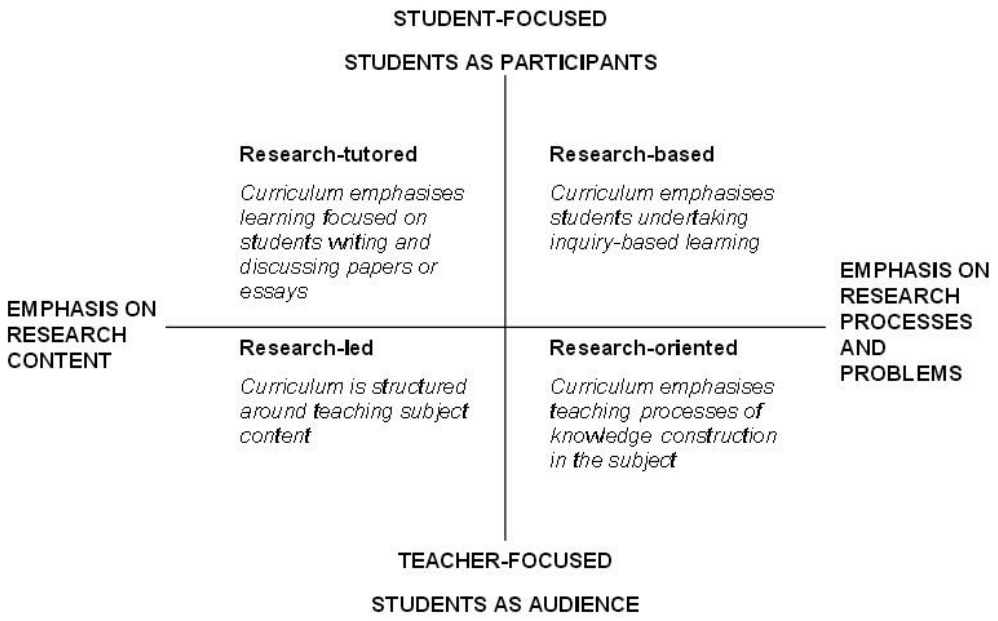

Figure 1: Curriculum design and research-teaching nexus (Healey, 2005)

In Figure 1, the link among research, practice, and teaching illustrates the need to include in pre-service teacher's curriculum exposure and practice of inquiry-based research skills. This will increase a teacher's application of evidence-based strategies and make the teaching pedagogy more student-focused.

Information Literacy

Although teachers' opinions are varied regarding the usefulness of research, teachers articulate that they are by no means categorically disinclined to using educational research to improve their practice. In fact, Behrstock, Drill, & Miller (2009) found that teachers are particularly inclined to seek out research when they have an immediate pressing concern, and their demand is greatest for research provided via the Internet, through trusted colleagues, by credible researchers, and in educational contexts similar to their own. However, their views of

what constitutes "credible" research tend to differ from those of professional researchers (Behrstock, Drill, & Miller, 2009).

Given that the volume of literature housed in the Educational Resources Information Center (ERIC) database now exceeds one million articles, it is unlikely that research sought by an individual teacher cannot be found and accessed. Previous researchers have concluded that for teachers to make effective use of knowledge, they must be able to identify and access high quality research. While the research publications available to the public are not necessarily unheard of to both pre-service and professional teachers, teachers lack motivation, adequate knowledge, or training to find credible sources to effectively implement these strategies into their classrooms or internships.

The ability to seek out, critically evaluate, and integrate appropriate evidence research is recognized as an important aspect of effective development in professional practice. In education, the concept of research-based teaching as part of reflective practice has been influential for many years (Williams & Coles, 2003). Early studies into the information literacy of student teachers pointed to the fact that there was a lack of confidence along with a lack of ability to find and use information within their professional lives (Best, R., Abbott, F., & Taylor, M. 1990; Wilson, 1997). Over a decade later, a study conducted by Williams and Cole (2003) showed that little had changed. Teachers reported having high confidence in finding information. However, they were more confident in finding general subject information (general background reading on a subject and/or in preparation for teaching) than they were in finding pedagogical evidence-based research.

Teachers cannot teach their pre-service teachers to be information literate unless they

themselves are able to understand how to find and use information (Carr, 1998). The Education and Behavioral Sciences Section (EBSS) of the Association of College and Research Libraries (ACRL) places value on conceptually rooted skills for searching, retrieving, and evaluating information for learners who are undergraduate students and beyond. Many decades ago, Miner (1992) developed a program at Brigham Young University that initially started as independent workshops and eventually grew to a full-course integrated program. The focus of the program was "preparing prospective teachers for ongoing self-renewal in terms of lifelong learning" (p. 259). The program was successful in fulfilling its objectives while enhancing the planned development of information literacy (Miner, 1992). The opportunity to gain proficient information literacy skill can positively increase the use of evidence-based education by pre-service teachers, not only within their internships, but also ultimately in their classrooms once they become professional educators.

CHAPTER FIVE: THE PROBLEM

Given the growing demands of increased high-stakes testing and standards-based assessments, educators are seeking ways to best prepare pre-service teachers to design effective instruction and assessment, ultimately meeting new core standards. While policymakers at the federal and state levels work toward education being an evidence-based profession, educators report making little use of research findings, irrespective of whether or not they are produced in academia or locally in schools (Dagenais, Lysenko, Abrimi, Bernard, Rande, & Janosz, 2012).

The perceived failure of teachers using educational research could actually be the absence of research in pre-service teacher preparation programs. Teaching is predominantly an undergraduate program (Green 1990). Eaker and Huffman (1981) reported that 75% percent of the teachers they sampled agreed that research findings, if not methods, should receive greater emphasis at the undergraduate level; 64% percent believed graduate programs in education are the most appropriate place to learn research methods.

A second reason proposed for teachers' failure to use educational research is due to the fact they perceive it as difficult to access. According to Williams et al., (2007), even if teachers do have access to research articles, they do not have the information literacy skills to confidently comprehend and evaluate the information being presented.

A third reason is that, once in the field, pre-service teachers often have poor role models. Some experienced teachers tend to assume that practices implemented in the classrooms or the changes made in curriculum always have evidence behind them to support such a change. They have confidence that changes being introduced are fully researched with positive outcomes. However, in this era of a market economy and the ability to make money by the development and

introduction of a new program or initiative, it is easy to be fooled by pseudo research or poor and invalid methodology. Few teachers have the time or inclination to pursue the paper trail of who funded a particular piece of research to establish the rigor, validity, and generalizability of the research. One research study advocating the success of a policy or intervention may be highlighted in the public domain, while several other studies finding negligible impact for the policy or intervention remain are inaccessible or unknown. This is disconcerting as it means that limited resources may be used ineffectively, which directly impacts the quality of teaching and learning in the classroom. In particular, pre-service teachers need to be aware that there are sources available to enhance and support their instruction as they progress in their journeys to become professional educators.

CHAPTER SIX: METHODOLOGY

This study will use a mixed methodology that focuses on the population of pre-service teachers at a large public institution and one state college in Central Florida. A survey (see Appendix C) will be administered to pre-service teachers and then followed up by a focus group (see Appendix D). In addition, a program faculty leader will be interviewed in an attempt to address the following:

- To identify the types of evidence-based practices pre-service teachers use during their internship.
- To identify the types of evidence-based strategies pre-service teachers use during their internship.
- To identify the utilization of evidence-based practices by pre-service teachers.
- To identify the factors that influences the utilization of evidence-based practices by pre-service teachers.
- To ensure the accessibility of the findings of this study.

This empirical research study hypothesizes that though the trend toward using evidence-based education to improve policies and practices is on the rise, pre-service teachers make little use of evidence-based education practices. In addition, it is not clear what conditions would facilitate or obstruct this use.

This hypothesis was formed based on the outcomes of prior studies, which conclude that the utilization of research varies depending on individual attitude awareness and expertise (Dagenais, et al., 2012). The results that should be gained from this thesis will further our knowledge of: (a) the use of evidence-based practices by pre-service teachers, (b) the

determinants of pre-service teachers' evidence-based practices use, and (c) the recommendations outlining ways in which teacher preparation programs can enhance their program content to address the identified issues with the outcome of improved K-12 student achievement.

The instrument used in this study is a modified version of Lysenko, Pigeon, Janosz, Bernard, Dagenais, & Abrami's (2007) survey created through *Qualtrics*, a private research software company and a provider of Online Survey Software. This survey was chosen because it grounded a previous research study to determine research-based information. According to Newton Suter (2012), "surveys are typically used by researchers when they want to gather information for the purpose for describing characteristics of a group" (p. 331), in this case pre-service teachers. "The survey may take many different forms, but the most common form is the written questionnaire" (p. 331). The format of the questionnaire may vary from items to be rated by respondents to multiple-choice questions as illustrated in this survey tool by the Likert questions.

Two focus group sessions will be conducted at each of the respective college locations using pre-service teachers who volunteer as part of the survey responses to participate in the follow-up focus group. The focus group sessions will be audio recorded using an electronic voice recorder. Open ended questions will be prepared to act as a conversation catalyst. The researcher will record the session in order to later transcribe all participants' conversation.

CHAPTER SEVEN: ANALYSIS OF DATA

The research design was submitted to the Institution Review Board (IRB) of a large public institution and one state college. Despite frequent communications via email, there were limited responses from the state college. Consequently, the survey was not distributed to the state college. Therefore, the research design focuses on one large public institution in Central Florida. The results presented and discussed draw from all data collected from the large public institution in Central Florida.

Population

After communication with various faculty members within the university of study regarding the best way to distribute the survey to ensure a large sample size, it was agreed that a link to the electronic survey would be distributed via the university's email contact to all students enrolled as an education major or minor. Students were first asked to complete the consent form. Once consent had been confirmed, a link was then provided to the actual survey. The population that received the emails asking for their participation in the survey and focus group consisted of N= 4,771 students.

Sample

Five hundred and sixteen pre-service teachers were motivated to take the survey, resulting in a 10.8% return in response. Of the pre-service teachers in the sample, 93% are currently enrolled as an education major, and the other 7% are enrolled as minors. Ninety percent of the respondents who completed the survey were women, and the other 10% were men. In addition, 84% of the respondents were within the age range of 18-29 years old. A total of

79% were completing either their junior or senior year of undergraduate studies. Almost three quarters of the respondents (71%) are currently taking part in either an internship or class-required field experience (i.e., Junior Achievement, which is an non-profit organization that provides pre-service teachers with hands-on experience delivering curriculum as a trained classroom volunteer or Service Learning, where theories and skills taught in class are implemented in the community and usually take place in an education setting).

Results

Respondents were asked which level of education they wish to teach. Sixty-two percent chose elementary, 26% secondary, and 12% desired to teach at the college level. Over half desired to teach in subject areas that have established state standards with regards to Reading, Language Arts, and Mathematics. In February 2014, the state of Florida approved both the Mathematics Florida Standards (MAFS) and Language Arts Florida Standards (LAFS). It is important that pre-service teachers have an understanding of evidence-based education so they may effectively and efficiently meet the new required standards.

The survey demonstrated that a total of 90% of the respondents believed that evidence-based practices are important to the education profession, with 44% stating that it is "somewhat important," and the other 46% stating that it is "very important" (Figure 2). A total of 69% "agree" or "strongly agree" the teaching of evidence-based education should be an essential part of the undergraduate program (Figure 3). In addition, 68% of respondents stated they have been introduced to the concept of evidence-based education in their pre-service program.

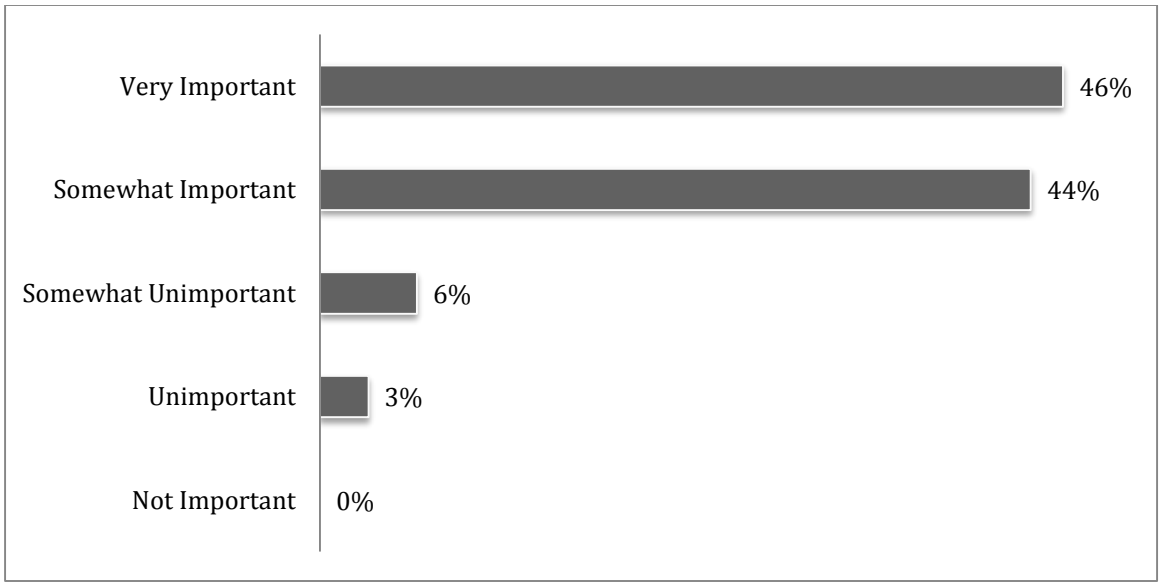

Figure 2: Importance of evidence-based practices for the education profession

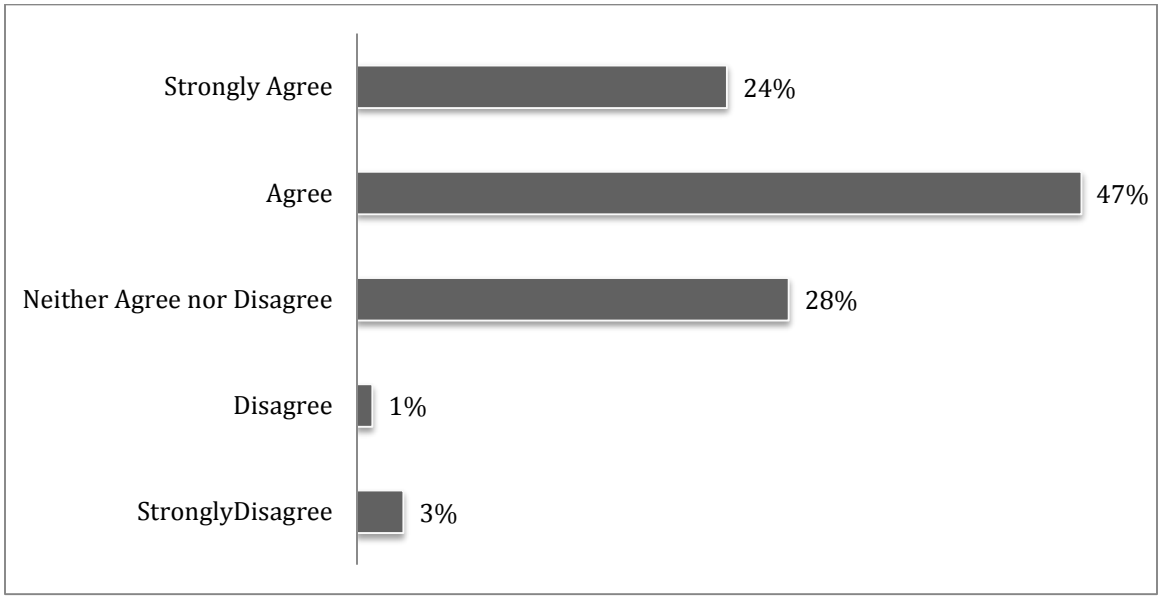

Figure 3: Opinions regarding evidence-based practices being essential to the undergraduate program

Implementation

While a large majority of respondents stated that evidence-based education in their undergraduate studies is important in order to ensure that teaching becomes an evidence-based profession, only a small percentage admit to consistently searching for evidence-based practices to potentially implement into their classrooms. Of students who are currently taking part in internships and required field experiences, 43% confessed they "sometimes" find themselves researching evidence-based practices, 25% "often," and 9% "all of the time" (see Figure 4).

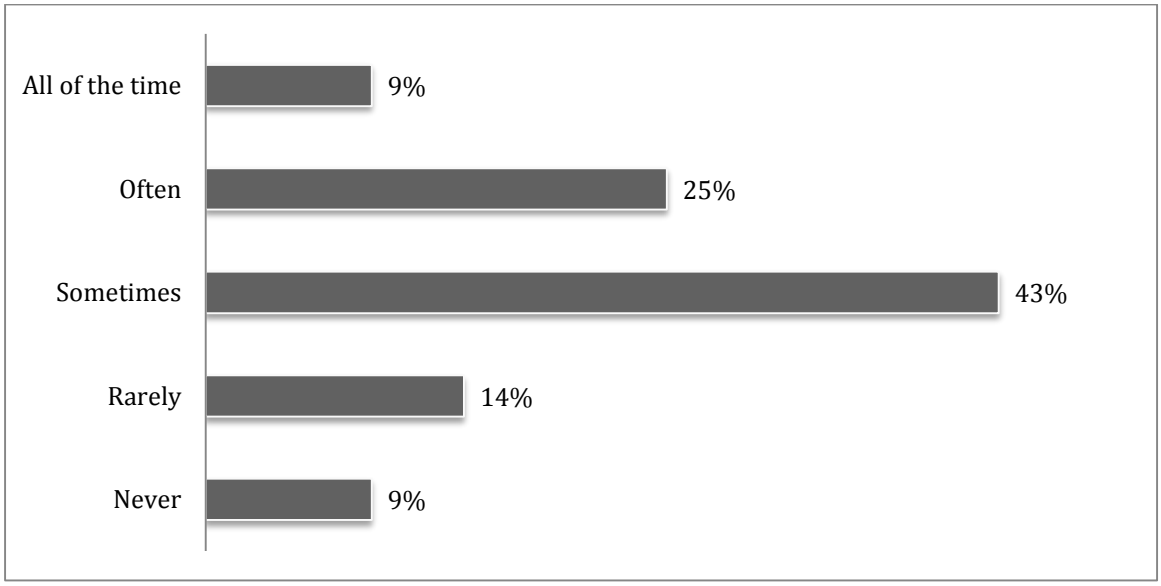

Figure 4: Response pertaining to the frequency of pre-service teacher researching evidence-based education

A total of 79% "agree" or "strongly agree" that evidence-based practices are important in increasing their abilities in becoming an effective teacher (see Figure 5). Respondents were asked to rate the extent to which they personally agreed or disagreed with a list of statements pertaining to the ease, relevance, timeliness, reliability, and transferability of evidence-based education practices. Less than half of the respondents (47%) agreed that evidence-based

education is easy, relevant, timely, reliable, and transferable into their internships and service-learning experiences.

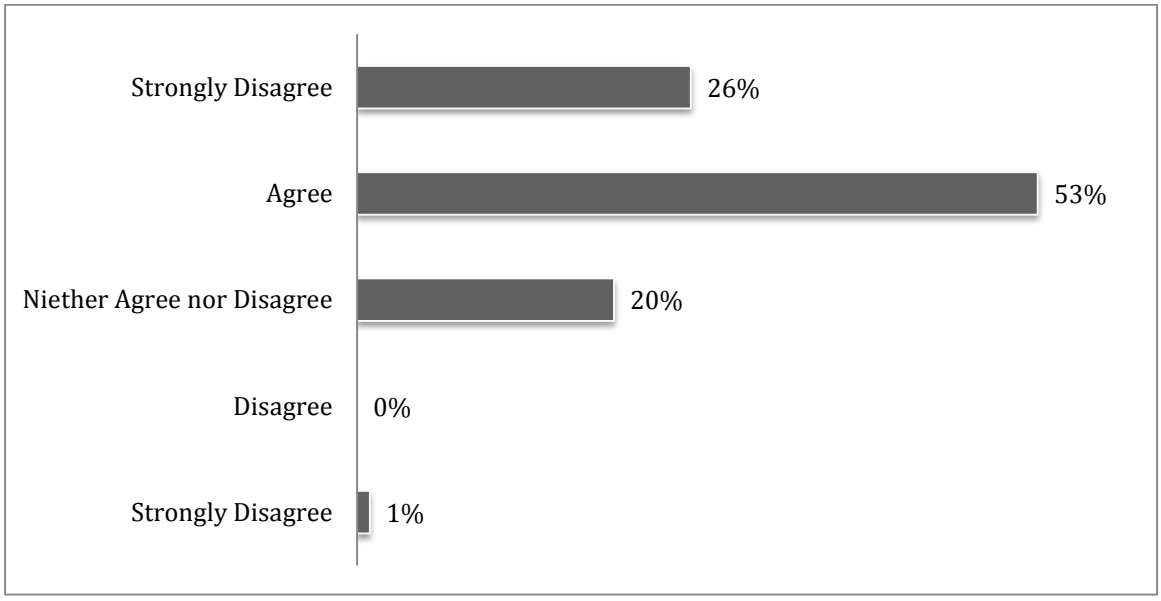

Figure 5: Responses pertaining to the importance of evidence-based practice increasing pre-service teachers' ability to become effective teachers

Focus Group

Students were also asked for their participation in a focus group, where they were given an opportunity to explain their opinions pertaining to evidence-based education in further detail. Six themes were identified from the focus group: Understanding of a definition of evidence-based education, identifying areas of the undergraduate curriculum focused on evidence-based practices, barriers, exposure, access, and attitude toward evidence-based education.

The quotes below are examples of pre-service teachers' perception of the appearance of evidence-based education research articles. While they still value the research provided, they are critical of the approach in presentation. In order to maintain anonymity, single initials are used for each member of the focus group.

> "I'm not someone who is going to read through an article, I'm more visual. I would prefer observing"- Student V.

> "With research papers it is literally that, so as a teacher trying to find more evidence-based education practices… it's going to be 99% text maybe a few graphs thrown in there. It's going to be very long and very boring."-Student T.

Positive views on the importance of evidence-based education were also expressed:

> "It is extremely important…education is a continual learning process as an educator; you have to be able to adapt."– Student B.

> "It is also important to feel the urge to try something new or unoriginal. To see if you can improve on evidence-based education, and create something new"– Student V.

The aforementioned quotes demonstrate the interest in sources pre-service teachers are using to access their research, since the look and feel of reading research articles that are

typically found via databases are viewed as unappealing. Popular sources used among pre-services teachers consisted of Google Scholar, which is a free, accessible web-based search engine. The Google search engine provides an array of scholarly literature from multiple disciplines and publishing formats. It is easy to access and does not require sophisticated search terms. In addition, a popular site was Pinterest, a social media site that is used as a tool to "pin" favorite finds from the Internet, such as DIY projects, food recipes, arts and crafts, wedding ideas, etc. Pinterest is a popular source because of its ease to navigate, use of compelling visuals, and its function in providing users with a personal space to save their favorite Internet finds. Feedback from the survey indicated that only 18% "never" used mass and social media as an avenue to access evidence-based education practices.

> "With our extended day program we use Pinterest; it has been very handy with certain activities some kids may have learning disabilities; you can find different things to accommodate kids with whatever disabilities, and it is fun for them."- Student S.

This minimal use raises curiosity of the various barriers pre-service teachers may encounter in their search.

> "Google will tell you everything."- Student B.

Feedback from the students who participated in the focus group could not determine many barriers beside pay walls that may be encountered while researching. Currently, while enrolled at the university, students have unlimited access to the Interlibrary Loan service, which allows for the borrowing of articles and books around the country to support students' studies. Once the students complete their degree requirements, they will lose access to the Interlibrary Loan; therefore, they will have to pay the price of pay walls to access some research articles if their county doesn't provide a public or private access to research. Members of the focus group appeared to have no established habits regarding the accessing of research and evidence-based practices.

CHAPTER EIGHT: DISCUSSION

Pre-service teachers are evidently not faced with the same numbers of obstacles as previously identified for professional educators. With vast improvements in technology over the past few decades and the popular use in social media sites like Facebook, Twitter, Tumblr, and Pinterest, it is no surprise to hear students note they wish for a more visual appearance of evidence-based education. Possibly to most researchers, the use of social media to locate evidenced-based practices to implement into the classroom is completely absurd and illogical. Yet, looking through the lens of young adults who grew up with the advancement of technology at their fingertips, this makes perfectly logical sense. Those persons born within the years of 1980-1994 are characterized as the Net Generation or the Millennias (McCrindle, 2006). Growing up in an era extremely flooded with media content and easy access to an array of technology, it is fairly easy to presume the popular use of social media to access educational practices. Yet, the access to one empirical research study has little validity whereas access to meta-analyses studies ensures rigor and validity.

Most pre-service teachers are accustomed to using the Interlibrary Loan, but when they graduate, they no longer have free access. This means that habits fostered in their pre-service teacher program are not being reinforced, and pre-service teachers are left to their own devices. This inconvenience can be resolved by allowing alumni access to library databases; yet, the problem's solution would have to be on a case-by-case basis. Another solution would be for public school systems or private schools to pay for access for their teachers. While lack of access may be a hindrance, the lack of awareness of evidence-based research is the most vital factor hindering access.

There seems to be a lack of knowledge as to what is considered evidence-based and where to access evidence-based material. Valuable websites such as What Works Clearinghouse provided by the Institute of Education Sciences and Best Evidence Encyclopedia were unknown. During an interview with the program coordinator of an education program, the researcher found that fourteen information literacy modules are accessible to all students online. Within the curriculum, students in the Early Childhood Education track are introduced to how to properly access peer reviewed articles via an online module in Social and Emotional Development of Young Children (EEC 3700). They are reintroduced to utilizing research methods and practices in their Senior Seminar course (EEC 4235C); this is a three-year gap from the freshman year.

There appears to be a gap or mismatch between faculty perception of pre-service teachers' exposure to research and evidence-based practices and the perception of pre-service teachers' exposure to research and evidence-based practices. Only with consistent practice will a habit of seeking out research be developed. Though the information literacy modules are available for students to access at any time, and it is their responsibility to access the resources given in the curriculum, it does not seem to be occurring; or if it is, there appears to be no lasting impact.

Unless access to the information literacy modules is enforced course-by-course, and year-to-year, it is unlikely that pre-service teachers will truly retain the information and take advantage of its pertinence. There is not a consensus among pre-service teachers of readily available online sites or academic journals soliciting evidence-based education or its practices. Students also lose access to course and library resources after graduation unless they had the foresight to make notes or download and save the literacy modules. According to the focus

group, this did not appear to have happened, since the online literacy modules were never mentioned.

It is in the pre-service program that hearts and minds are reached. Habits formed are long-lasting, so it is imperative that students are exposed to research sites that they will continue to use after graduation to enhance best practices. Failure to do so may ultimately impact their future professional evaluations as federal policymakers and state policymakers work to ensure that education is an evidence-based profession.

CHAPTER NINE: CONCLUSION

The data show that students in the pre-service teacher program at a large public institution had a limited understanding of evidence-based education but had been introduced to evidence-based education at one point or another within their studies. Further analysis of the data collected in this study highlights the fact that students have a perception that there is little emphasis on what constitutes evidenced-based educational practices in their pre-service teacher program. In addition, the lack of knowledge among students and faculty of online sites that are reputable for evidence-based education practices needs to be addressed.

When undergraduate teacher preparation programs place an emphasis on evidence-based education and enforce inquiry research methods throughout the length of its program, it will increase pre-service teachers' efficacy and information literacy skills. Thus, providing the skills to effectively and efficiently implement evidence-based education practices. This will improve teaching and learning in the classroom, ensure that resources are used effectively and efficiently, and help fulfill the goal of the U.S. Department of Education Strategic Plan by making the education profession an evidence-based field

At an individual level it is important that research on what works best should be an integral part of a teacher's repertoire. By disseminating evidence-based education to teachers through presentations and publications, it is hoped that an increasing number of teachers become consumers of research as they identify problems of practice which require an intervention to resolve.

This research will help teacher preparation programs ensure that pre-service teachers have the skills and knowledge they need to implement evidence-based practice in their

classroom. It will also help pre-service teachers to ensure their programs emphasize the utilization, access, and implementation of evidence-based strategies. At a departmental or institutional level, creating opportunities for undergraduate research is a powerful way to reinvigorate the undergraduate curriculum, potentially breaking down barriers between teaching and research so that they become one integrated system of performance (Jenkins & Healey, 2009).

APPENDIX A: IRB APPROVAL LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Valerie Anne Storey** and Co-PI: **Stefanie Campbell**

Date: **July 09, 2014**

Dear Researcher:

On 7/9/2014, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	Why Evidence Matters: Examining the practices used within the education department of a large public higher education institution, and the relevancy of research based information to pre-service teachers.
Investigator:	Valerie Anne Storey
IRB Number:	SBE-14-10322
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Kanille Chap

IRB Coordinator

APPENDIX B: TIMELINE

TIMELINE

NOVEMBER 2013	Received IRB Certification
MAY 2014	Write IRB Protocol
JUNE 2014	Submit IRB Protocol
JULY 2014	Receive IRB Approval
JULY 2014	Contact Undergraduate Affairs to Send Survey &Emails
SEPTEMBER 2014	Release of Survey
SEPTEMBER 2014	Conducted Focus Group
OCTOBER 2014	Analysis of Collected Data
OCTOBER 2014	Initial Format Review
OCTOBER 2014	Thesis Defense
NOVEMBER 2014	Submit Thesis Attachment Form
NOVEMBER 2014	Submit Thesis Approval Form
DECEMBER 2014	Complete Thesis

APPENDIX C: SURVEY

EXPLANATION OF RESEARCH

Q2 **Title of Project**: Why Evidence Matters: Examining the practices used within the education department of a large public higher education institution, and the relevancy of research based information to pre-service teachers.

Principal Investigator: Dr. Valerie Anne Storey

Co-Investigator: Ms. Stefanie Alexia Campbell

Faculty Supervisor: Dr. Valerie Anne Storey

You are being invited to take part in a research study. Whether you take part is up to you.

- This research study is being conducted to evaluate the knowledge of evidence based research education and how pre-service teachers like you make use of evidence based research education.
- As a participant you will be asked to complete an online survey through Qualtrics, that will be disseminated via UCF knights email and Valencia College students email system.
- This survey is anonymous. That means that no one, not even members of the research team, will know that the information you gave came from you.
- Expected time to complete the survey is 10 minutes. You must be 18 years of age or older to take part in this research study.

  Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints contact Stefanie Campbell, undergraduate student, College of Education and Human Performance, (407) 242-6520 or email at Stefanieucf@knights.ucf.edu or Dr. Valerie Anne Story, Faculty Supervisor, Department of Education and Human Performance (407) 823-1761 or email at Valerie.Storey@ucf.edu

  IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

❍ I agree to complete the survey (1)

Q3 Are you male or female?
- ❍ Male (1)
- ❍ Female (2)

Q4 What is your age range?
- ❍ 18-29 years old (1)
- ❍ 30-39 years old (2)
- ❍ 40-49 years old (3)
- ❍ 50 years old or older (4)

Q5 Are you completing an education major or minor?
- ❍ Major (1)
- ❍ Minor (2)

Q6 What year are you currently?
- ❍ Freshman (1)
- ❍ Sophomore (2)
- ❍ Junior (3)
- ❍ Senior (4)

Q7 Which institution do you attend?
- ❍ University of Central Florida (1)
- ❍ Valencia College (2)

Q8 What grade level do you wish to teach?
- ☐ Elementary Level (1)
- ☐ Secondary Level (2)
- ☐ Higher Institution (3)

Q9 What subject area do you wish to teach?

- ❍ Reading/ Language Arts (1)
- ❍ Mathematics (2)
- ❍ Science (3)
- ❍ Social Science (4)
- ❍ Physical Education (5)
- ❍ Art (6)
- ❍ Music (7)
- ❍ Foreign Languages (8)
- ❍ counseling (9)
- ❍ other (10)

Q10 As an education major/minor, have you been introduced to the concept of evidence based education practices in your classes?

- ❍ Yes (1)
- ❍ No (2)

Q11 Are you currently taking part in any internships or class required field experiment IE. Junior Achievement or Service Learning?

- ❍ Yes (1)
- ❍ No (2)

Q12 As a pre-service teacher do you have prior knowledge of evidence based education practices outside of your classes?

- ❍ Yes (1)
- ❍ No (2)

Q13 As a pre-service teacher do you feel that the teaching of evidence based education practices should be an essential part of the undergraduate program?

- ❑ Strongly Disagree (1)
- ❑ Disagree (2)
- ❑ Neither Agree nor Disagree (3)
- ❑ Agree (4)
- ❑ Strongly Agree (5)

Q14 As a pre-service teacher do you find yourself researching evidence based practices to help you plan for your internships or class required field experiments?

- ❍ Never (1)
- ❍ Rarely (2)
- ❍ Sometimes (3)
- ❍ Often (4)
- ❍ All of the Time (5)

Q15 As a pre-service teacher do you think evidence based practices are important in increasing your ability to becoming an effective teacher?

- ❍ Strongly Disagree (1)
- ❍ Disagree (2)
- ❍ Neither Agree nor Disagree (3)
- ❍ Agree (4)
- ❍ Strongly Agree (5)

Q16 Rate how often you think all or most of the professors at your institution use evidence based practices in their lessons.

- ❍ Never (1)
- ❍ Occasionally (2)
- ❍ Very Often (3)
- ❍ Always (4)

Q17 Rate the importance of evidence based practice to the education profession?

- ❍ Not at all Important (1)
- ❍ Very Unimportant (2)
- ❍ Somewhat Unimportant (3)
- ❍ Somewhat Important (4)
- ❍ Very Important (5)

Q18 Rate the extent to which you personally agree that evidence based practices fits the following statements below.

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Is easy to find (1)	❍	❍	❍	❍	❍
Is easy to understand (2)	❍	❍	❍	❍	❍
Is relevant to you (3)	❍	❍	❍	❍	❍
Offers timely information (4)	❍	❍	❍	❍	❍
Is reliable (5)	❍	❍	❍	❍	❍
Is easy to transfer into your internships or class required field experiments (6)	❍	❍	❍	❍	❍

Q19 Rate the frequency in which you used evidence based practices in order to:

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	All of the Time (5)
Achieve a better understanding of issues in your practice (1)	❍	❍	❍	❍	❍
Satisfy intellectual curiosity (2)	❍	❍	❍	❍	❍
Improve your professional practice (3)	❍	❍	❍	❍	❍
Justify on validate your action and your decisions (4)	❍	❍	❍	❍	❍
Develop new activities, programs, guidelines, and materials. (5)	❍	❍	❍	❍	❍
I have not used evidence based practices (6)	❍	❍	❍	❍	❍

Q20 Rate the frequency in which you have used the following to access evidence based practices.

	Never (1)	Rarely (2)	Sometimes (3)	Often (7)	All of the Time (8)
Internet websites (1)	❍	❍	❍	❍	❍
Scholarly documents/ literature (2)	❍	❍	❍	❍	❍
Professional conferences or presentations (3)	❍	❍	❍	❍	❍
Pre-service training or class courses (4)	❍	❍	❍	❍	❍
Mass and social media (5)	❍	❍	❍	❍	❍

Q21 Thank you for your time, enjoy your day!

APPENDIX D: FOCUS GROUP QUESTIONS

FOCUS GROUP QUESTIONS

Research Title: Why evidence matters: Examining the practices used within the education department of a large public higher education institution, and the relevancy of research based information to pre-service teachers.

Investigators: PI-Investigator Dr. Valerie Anne Storey
Co-Investigator Ms. Stefanie Campbell

Focus Group Questions

- What does evidence based education mean to you?
- If you use evidence based education practices, how do you implement them?
- What evidence based practices have you found work for you and your students?
- What are your thoughts about the importance and relevance of evidence based practices?
- What are some difficulties you've experienced researching evidence based education practices?
- What are you opinions on evidence based education being a part of the pre-service teacher undergraduate curriculum, i.e. a class that teaches specifically how to research evidence based education practices?

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